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Sir:

Transmitted herewith for filing is the patent application of

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For: APPARATUS AND METHOD FOR DISPLAYING ADDITIONAL INFORMATION

Enclosed are:

_X_ A specification consisting of <u>23</u> pages

_X_ _3_ sheet(s) of <u>Formal</u> drawings

____ An assignment of the invention

_X_ Certified copy of Priority Document(s)

_X_ Executed Declaration ____ Original _X_ Photocopy

____ A verified statement to establish small entity status under 37 CFR 1.9 and 37 CFR 1.27

____ Preliminary Amendment

____ Information Disclosure Statement, PTO-1449 and reference(s)

___ Other _____

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Respectfully submitted,

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# APPARATUS AND METHOD FOR DISPLAYING ADDITIONAL INFORMATION

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# BACKGROUND OF THE INVENTION

## Field of the Invention

The present invention relates to a TV, and more particularly, to device and method for displaying additional information to a TV program.

## Background of the Related Art

Generally, an audio/video signal transmitted to a TV also includes additional information data. Particularly, the additional information data, such as a weekly broadcasting guide information, is provided to better serve the viewers. Therefore, a TV receiver requires a demultiplexer, by which a received signal is separated into a video signal, an audio signal, and additional information data. Namely, the demultiplexer separates either a Transport Stream (TS) or a Program Stream (PS) which include a plurality of elementary data streams such as the video, audio and other additional information combined by a broadcasting station for storage or for transmission of data.

Thus, the additional information may be displayed on a TV screen with or separately from a broadcasted image by an Electronic Program Guide (EPG). Particularly, the EPG contains basic TV guides for program times and channels as well as detail information such plots, the type of program, whether the program is pay TV, or other available services. Thus, viewers can obtain information about present and future TV programs directly from a TV screen, without need of other guide mediums such as a

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newspaper. As the number of channels and programs increase, the EPG provides a more convenient tool in searching for and/or viewing a program.

Fig. 1 is a block diagram of a typical digital TV receiving and displaying program guide information. The digital TV includes a remote control 101 which allows viewers or users to control of the TV by radio signals; a remote receiver 102 which receives signals output by the remote control 101 and outputs a key code value corresponding to a key input by the user through the remote control 101; a tuner 103 which tunes frequency corresponding to a desired channel among the signals received through an antenna or a cable; a demodulator 104 which demodulates the tuned channel frequency by a reversed modulation; a demultiplexer 105 which demultiplexes and separates the demodulated signal into an audio/video signals and additional guide information data; an audio/video decoder 106 which decodes the audio/video signal separated by the demultiplexer 105; a display unit 107 which displays the decoded signal; a storage 108 which stores the program guide information data separated by the demultiplexer 105; a controller 109 which controls the tuner 103, the demodulator 104, the demultiplexer 105, the storing and the displaying of the program guide information data, in accordance with the signal from the remote receiver 102; and a memory 110 which temporarily stores the data from the storage 108 in accordance with the control of the controller 109.

To operate the digital TV receiver, a user selects program channels transmitted through an antenna or a cable using the remote control 101 such as by pressing keys. The remote receiver 102 then outputs to the controller 109 a key code value corresponding to the key input from the remote control 101. The controller 109 outputs a control signal for tuning a desired channel frequency in accordance with the key code value of the remote receiver 102. Additionally, the controller 109 respectively outputs control signals to the demodulator 104 and the demultiplexer 105, for demodulating the tuned signal and for demultiplexing the demodulated signal.

The tuner 103 tunes a selected channel frequency among the signals received through an antenna or a cable in accordance with the control signal of the controller 109, and outputs the tuned channel frequency to the demodulator 104. The demodulator 104 demodulates the tuned channel frequency under the control of the controller 109. For example, if the input signal is Vestigial Side Band (VSB) modulated, the demodulator 104 performs a VSB demodulation. On the other hand, if the input signal is Orthogonal Frequency Division Multiplexing (OFDM) modulated, the demodulator 104 performs an OFDM demodulation to output a demodulated signal to the demultiplexer 105.

The demodulated signal input to the demultiplexer 105 is a multiplexed transport packet including the audio signal, the video signal and the additional information data. Thus, the

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demultiplexer 105 demultiplexes the signal under the control of the controller 109 and separates the audio/video signals from the additional information data. The audio/video signals are output to the audio/video decoder 106 and the additional information including the program guide information such as the title, rating, time and plot of a program is stored in the storage 108.

The audio/video decoder 106 decodes the audio/video signals and outputs the decoded signal to the display unit 107. The display unit 107 displays the decoded video signals on a TV screen and plays the decoded audio signals through a speaker. The additional information data regarding a program being displayed on the display unit is read from the storage 108 by the controller 109 and temporarily stored in the memory 110. The controller 109 then informs users through the display unit 107 that there is additional information for the program being displayed. If there is a request to view the additional information from the user, the controller 109 reads the additional information data stored in the memory 109 and displays the information on the display unit 107.

Therefore, the digital TV as described above can display information regarding the program such as a program content, program time, names of heroes, if additional information is transmitted by broadcasting stations or external program providers. As a result, a user's request for more information cannot be met due to the limitation of the EPG data.

## SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to solve at least the problems and disadvantages of the related art.

An object of the present invention is to provide an apparatus and method for displaying detailed additional information on objects in a program.

Another object of the present invention is to provide an apparatus and method for displaying additional information from an external source such as an Internet, thereby providing a variety of information even if information on a program is not included in the additional information.

Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objects and advantages of the invention may be realized and attained as particularly pointed out in the appended claims.

To achieve the objects and in accordance with the purposes of the invention, as embodied and broadly described herein, an apparatus for displaying additional information includes a data separator for receiving broadcasting signals, selecting and demodulating a desired program, and separating the additional information from the demodulated signal; a decoder for detecting detail information on each object in the program being displayed

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from the additional information, and decoding the detail information to store the detail information on objects; a storage for storing the data decoded at the decoder; a display for displaying detail information on each object stored in the storage at preset positions of the program being displayed at the time when detail information display of the objects is selected through a selector; and a controller for controlling the separation of the additional information data, the decoding at the decoder, the data storage at the storage, and the display of various detail information.

In the above apparatus, the storage stores a table which includes a number of object tables, table IDs, and object names corresponding to characteristic tables for objects in the decoded program. Each characteristic table corresponding to an object in the decoded program includes information such as a media type, a number of frames, positions, sizes and state of the object. Thus, the controller informs users that there is detail information for each of the objects stored in the storage.

Also, the selector may be one of a panel key attached to the display, a remote control outputting a radio signal according to a user input, a keyboard or a mouse which outputs a radio or cable signal. Moreover, the above embodiment may further include a modulation/demodulation unit to search a host or a server in a program provider for detail information selected by a user when the user requests for detail information not included in the

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additional information.

In another embodiment of the present invention, an apparatus for displaying additional information includes a data separator for receiving broadcasting signals, selecting and demodulating a desired program, and separating additional information from the demodulated signal; a storage for storing the additional information data; a controller for controlling the data separation at the data separator, the display of data stored in the storage, and also controlling extraction of an item list for the user to select and display; and a display for displaying the program and the data stored in the storage under the control of the controller, and displaying the item list related to each object in the present program.

Also, a modulation/demodulation unit may be added for detecting the detail information of items selected from Internet and storing the information in the storage if at least one item list is selected through the selector.

In still another embodiment of the present invention, a method for displaying additional information includes (1) detecting detail information for each object in a program being displayed from the additional information data, and storing the detail information sorted by objects, (2) extracting the stored detail information for each object, and displaying the detail information at preset positions around the objects being displayed, when a user selects to view the detail information on

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objects, and (3) controlling the additional information separation, the data storage, and the display of a variety of detail information.

Here, the additional information data is transmitted, with information table IDs, media types, a number of frames, positions, sizes, and states for the object displayed in each frame. If the user requests for more detail information than the detail information on the object already being displayed, the method further includes searching an external server, host, or the Internet for the more detail information on the object; and displaying more detail information at preset positions around the object being displayed.

In still a further embodiment of the present invention, a method for displaying additional information includes extracting and displaying an item list the user may possibly want to view which are not included in the additional information; and searching the Internet for the detail information on an item if at least one time is selected from the item list; and displaying the selected item.

## BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described in detail with reference to the following drawings in which like reference numerals refer to like elements wherein:

FIG. 1 is a block diagram of a digital TV receiver in the

related art;

FIG. 2 is a block diagram of an apparatus for displaying additional information in accordance with a preferred embodiment of the present invention; and

FIG. 3 is a block diagram showing one example of data stored in an object data memory of FIG. 2.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. FIG. 2 is a block diagram of an apparatus for displaying additional information in accordance with a preferred embodiment of the present invention.

Referring to FIG. 2, the present apparatus for displaying additional information includes a selector 101 such as a remote control, a remote receiver 102, a tuner 103, a demodulator 104, a demultiplexer 105, an A/V decoder 106, a display 107, a memory 110, and a controller 201 which operate as in the digital TV described with reference to FIG. 1. However, the present apparatus further includes a MODT decoder 202 which decodes additional information into a Media Object Description Table (MODT) data, an object data memory 203 which stores the MODT data, and a modem 204 which receives a variety of detail information from an external host or server such as the Internet and stores the received information in the object data memory 203

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in response to a control signal from the controller 201.

In response to a signal from the remote receiver 102, the controller 201 controls the tuning by the tuner 103, the demodulation by the demodulator 104, the demultiplexing by the demultiplexer 105, and the storage and display of the additional information data. The controller 201 also extracts the MODT data from the object data memory 203, outputs a control signal corresponding to the MODT data, and outputs control signals to display the detail information.

Also, the object data memory 203 is generally a storage, and the memory 110 may be a RAM, wherein the memory 110 temporarily stores a data extracted from the object data memory 203 for display under the control of the controller 201. Moreover, the selector 101 may be a remote control, a panel selector attached to the display, such as the TV receiver, or a keyboard or connected to the TV receiver by a cable or radio signal. However, in the preferred embodiment, a remote control is used as the selector 101.

FIG. 3 shows an example of data stored in the object data memory 203 of FIG. 2. As shown, an object table including a number of table, table IDs and object names for objects in a program is stored. Also, a characteristics table including information such as media type, a number of frames, positions, sizes and states of an object for each object corresponding to a table ID is stored. The operation of the present apparatus for

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displaying additional information will next be described.

The demultiplexer 105 demultiplexes the program selected by a user from a signal demodulated at the demodulator 104 and separates program into the audio/video signals and the additional information data in response to a control signal from the controller 201. The audio/video signals are output to the audio/video decoder 106, and the additional information data is output to the MODT decoder 202.

The MODT decoder 202 detects detail information on objects being displayed on the display 107, decodes the detailed information into MODT data, and, stores the MODT data. Here, the object may be a person or a thing(s) within a frame being displayed. That is, the MODT decoder 202 decodes the detail information on the objects being displayed from the additional information data; generates an object table showing a number of tables, table IDs, and object names for the program from the broadcasting station or the external program provides; and stores the object table in the object data memory 203. Moreover, the MODT decoder 202 generates a characteristic table including spatial and temporal information on each object, such as media type, a number of frames, positions, sizes, and states of the object each object in the object table; and stores the characteristic table in the object data memory 203. The media type is, for example, an audio, a video, or a character.

Thus, the controller 201 informs a user that there is detail

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information on objects in addition to the program being displayed. The existence of detail information on an object may be informed using any one sense of a user such as sight or sound. For example, an identification figure, such as icon or a list in a form of menu may be used. In the latter case, object names having corresponding detail information may be listed on the menu.

Accordingly, a user may press a key on the remote control 101 to request a display of the detail information on· an object upon noticing the message that there is detail information on objects in the program being displayed. The remote receiver 102 then receives a signal from the remote control 101, and outputs to the controller 201 a signal for requesting a display of the detail information on the selected object. The controller 201 extracts the detail information corresponding to the selected object from the object data memory 203, temporarily stores the extracted information in the memory 110, and reads and displays the detail information from the memory 110 on the display unit 107 at a preset position around the selected object of the program being displayed. Namely, detail information on all or one object(s) selected by the remote controller 101 is displayed at a preset position around a corresponding object.

However, if the user wishes to view more detail information than the currently displayed information, the user may press a predetermined key on the remote control 101 to request for more

detail information. The remote receiver 102 then receives a signal from the remote control 101 and outputs to the controller 201 a signal to request for more detail information. In response, the controller 201 automatically extracts a list of possible items that the user may wish to view from the data stored in the object data memory 203; and displays the list on the display 107 at a preset position of a program being displayed.

An example of a list automatically extracted is as follows. If the program being displayed is a relay broadcasting of a baseball game in which Chanho-Park appears, the list may include, Chanho-Park, LA Dodgers, or the Major League. If a user finds interest in an item automatically extracted and displayed, the user may press a key on the remote control 101 to request a further display. Otherwise, the user may enter a request for a desired information directly by means of a character input feature on the remote control 101. The remote receiver 102 receives a signal from the remote control 101, and outputs to the controller 201 a signal to search for the information requested by the user.

In response, the controller 201 controls the modem 204, a modulator and a demodulator, and connects to the Internet outside of the TV receiver to search for the requested information. The controller 201 stores a result of the search in the object data memory 203. Here, the connection to the Internet may be by cable or radio depending on the type of the modem 204. Also, if a

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direct connection is formed to a modem of a program provider, the detail information may be obtained through a server or host of the program provider.

Thus, the controller 201 extracts further detail information obtained through the modem 204 from the object data memory 203, loads the extracted information on the memory 110, and displays the requested information, i.e. the detail information, on the display 107 at a preset position of a program being displayed.

Furthermore, even if the additional information data does not include detail information on each object, i.e. includes simply information on the program itself, the additional information data from the demultiplexer 105 is stored in the object data memory 203 and reception of the additional information data is informed to the user. Thus, if a user wishes to view detail information on an object while viewing the additional information such as the EPG information, a user may press a key on the remote control 101 to request a display of the detail information on an object.

As in obtaining further detail information other than the information included in the additional information, the controller 201 controls the modem 204, a modulator and a demodulator, and connects to the Internet outside of the TV receiver to search for the detail information. The controller 201 stores a result of the search in the object data memory 203. Here also, the connection to the Internet may be by cable or radio

depending on the type of the modem 204 and the detail information may be obtained through a server or host of the program provider if a direct connection is formed to a modem of a program provider.

Thus, the controller 201 extracts the detail information obtained through the modem 204 from the object data memory 203, loads the extracted information on the memory 110, and displays the detail information on the display 107 at a preset position of a program being displayed. Alternatively, the controller 201 may automatically extracts a list of possible items that the user may wish to view from the data stored in the object data memory 203; and displays the list on the display 107 at a preset position of a program being displayed such that a user may select an item of interest. In such case, the controller 201 would extract and display the detail information corresponding to the selected item from the memory 110.

Therefore, in the present apparatus, a search for detail information may be made if the additional information does not include a detail information, or a search for further detail information not included in the additional information may be made through a modem. Also, in the above embodiment, the searched information is stored in the object data memory 203 when a search for information is requested through the modem. However, the searched information may alternatively be displayed as a list in the form of a menu at a preset position of the TV screen. Thus,

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a user may select and display a particular information from the list using the remote control. Moreover, the menu may allow the user store the searched information in the object data memory 203, if desired.

Therefore, the apparatus and method for displaying additional information according to the present invention allows a user to view detail information on objects in a program, where the detail information is obtained from the additional information and/or from an external source such as the Internet. As a result, demands for detail information from users may be met, thereby overcoming the limitations on the amount of data that can be transmitted from broadcasting stations or program providers to a TV receiver.

The foregoing embodiments are merely exemplary and are not to be construed as limiting the present invention. The present teachings can be readily applied to other types of apparatuses. The description of the present invention is intended to be illustrative, and not to limit the scope of the claims. Many alternatives, modifications, and variations will be apparent to those skilled in the art.

What is Claimed is:

1. An apparatus for displaying additional information comprising:

a selector which receives a program selection input from a user and which includes a key for requesting detail information on an object in a selected program;

a data processor which receives broadcasting signals, selects and demodulates from the received broadcasting signals the selected program, and separates additional information from the demodulated signal;

a decoder which detects from the additional information, detail information on objects in the selected program being displayed, and decodes the detail information into a plurality of object information;

a storage which stores the plurality of object information;

a display which displays an object information stored in the storage when a user requests to view detail information on an object being displayed through said key on the selector, where said object information corresponds to the object being displayed; and

a controller which controls the separation of the additional information data, the decoding of the detail information, the storing of the plurality of object information, and the display of the object information.

2. An apparatus of claim 1, further comprising a modem through which the controller connects to an external source to obtain detail information in response to a request from a user to view detail information.

5      3. An apparatus of claim 2, wherein the controller connects to an Internet to search for the detail information requested by a user when said detail information is not included in the additional information.

4. An apparatus of claim 2, wherein the controller connects

10     directly to a host or a server in a program provider to obtain the detail information requested by a user when said detail information is not included in the additional information.

5. An apparatus of claim 1 wherein the plurality of object information are stored in an object table according to object

15     names and wherein each object name has a corresponding characteristic table which includes detailed information.

6. An apparatus of claim 5, wherein the characteristic table includes media type, a number of frames, positions, sizes and states of an object.

20     7. An apparatus of claim 1, wherein the controller informs

a user that there is detail information on objects in addition to the program being displayed.

8. An apparatus of claim 7, wherein the controller informs a user that there is detail information on objects by displaying an item list in a form of a menu on the display at a predetermined position.

9. An apparatus of claim 1, wherein the selector is one of a panel key attached to the display, a remote control, a keyboard or a mouse.

10. A method for displaying additional information comprising:

receiving a program selection input from a user through a selector which includes a key for requesting detail information on an object in a selected program;

receiving broadcasting signals, selecting and demodulating from the received broadcasting signals a program selected by a user through the selector, and separating additional information from the demodulated signal;

detecting from the additional information, detail information on objects in the selected program being displayed, and decoding the detail information into a plurality of object information;

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storing the plurality of object information; and

displaying an object information stored in the storage when a user requests to view detail information on an object being displayed, where said object information corresponds to the object being displayed.

11. A method of claim 10, further comprising connecting to an external source to obtain detail information in response to a request from a user to view detail information.

12. A method of claim 11, wherein connecting to an Internet to search for the detail information requested by a user when said detail information is not included in the additional information.

13. A method of claim 13, wherein said detail information not included in additional information may be requested by inputting characters through the selector.

14. A method of claim 11, wherein connecting directly to a host or a server in a program provider to obtain the detail information requested by a user when said detail information is not included in the additional information.

15. A method of claim 10, wherein storing the plurality of

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object information in an object table according to object names and wherein each object name has a corresponding characteristic table which includes detailed information.

16. A method of claim 15, wherein the characteristic table includes media type, a number of frames, positions, sizes and states of an object.

17. A method of claim 10, further comprising informing a user that there is detail information on objects in addition to the program being displayed.

18. A method of claim 17, wherein informing a user that there is detail information on objects by displaying an item list in a form of a menu on the display at a predetermined position.

19. A method of claim 10, wherein the selector is one of a panel key attached to the display, a remote control, a keyboard or a mouse.

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ABSTRACT

An apparatus and method for displaying additional information on a TV program is disclosed. In the present invention, both a detail information included in the additional information transmitted by a broadcasting station or detail information obtained from an external source such as the Internet may be displayed to a user, if requested.

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# FIG.1
## Background Art

```
103          104           105            106          107
  ┌───────┐  ┌────────────┐  ┌──────────────┐  A/V┌──────────────┐  ┌──────────┐
Y─│ tuner │──│ demodulator│──│ demultiplexer│─────│ audio/video  │──│ display  │
  └───────┘  └────────────┘  └──────────────┘     │   decoder    │  │   unit   │
                                                   └──────────────┘  └──────────┘

                              additional           109
                              information data
                                                ┌────────────┐      ┌──────────────┐
                              ┌──────────┐      │ controller │──────│    remote    │
                              │ storage  │──────│            │      │   receiver   │
                              └──────────┘      └────────────┘      └──────────────┘
                                   108                │              102
                                                 ┌──────────┐
                                                 │  memory  │        ┌──────────────┐
                                                 └──────────┘        │    remote    │
                                                      110            │  controller  │
                                                                     └──────────────┘
                                                                      101
```

# FIG.2



**103** tuner

**104** demodulator

**105** demultiplexer

additional information data

**106** audio/video decoder

A/V signal

**107** display unit

**201** controller

**110** memory

**102** remote reciver

**101** remote controller

**202** MODT decoder

**203** added information or detailed information on each object

external detailed information data

**204** modem

# FIG.3

object table

| a number of total table | No |
|---|---|
| #1 | object name |
| #2 | . |
| #3 | . |
| ⋮ | |

table ID

characteristic table#1

| media type | |
|---|---|
| frame | |
| position | |
| size | |
| ⋮ | |
| state | |

characteristic table#2

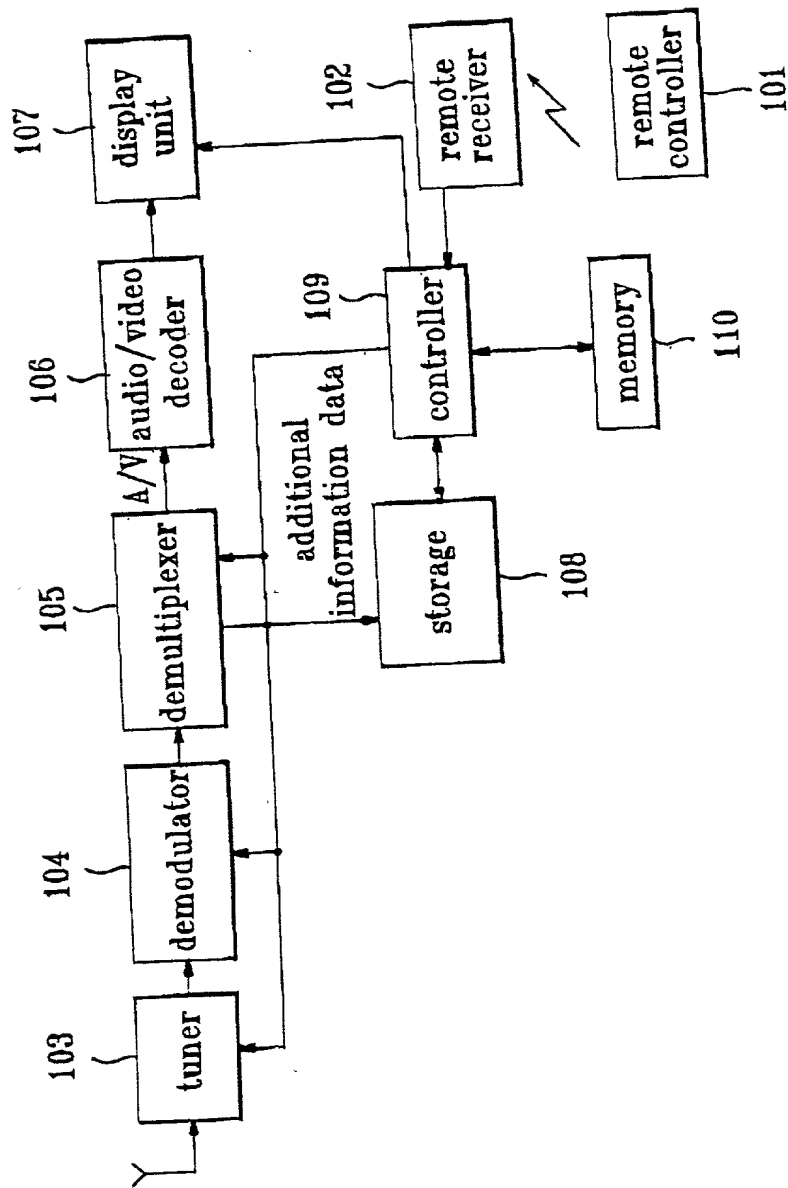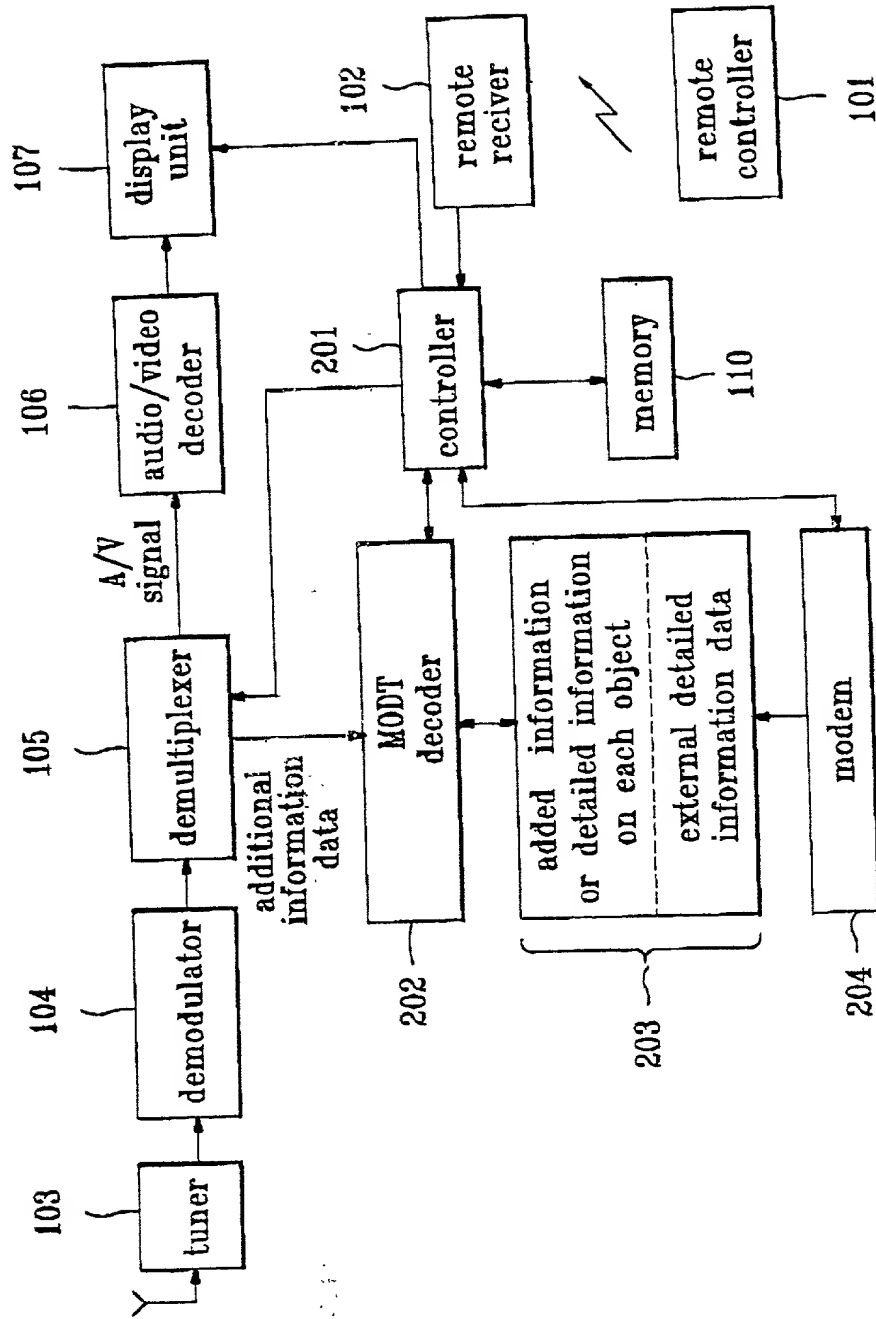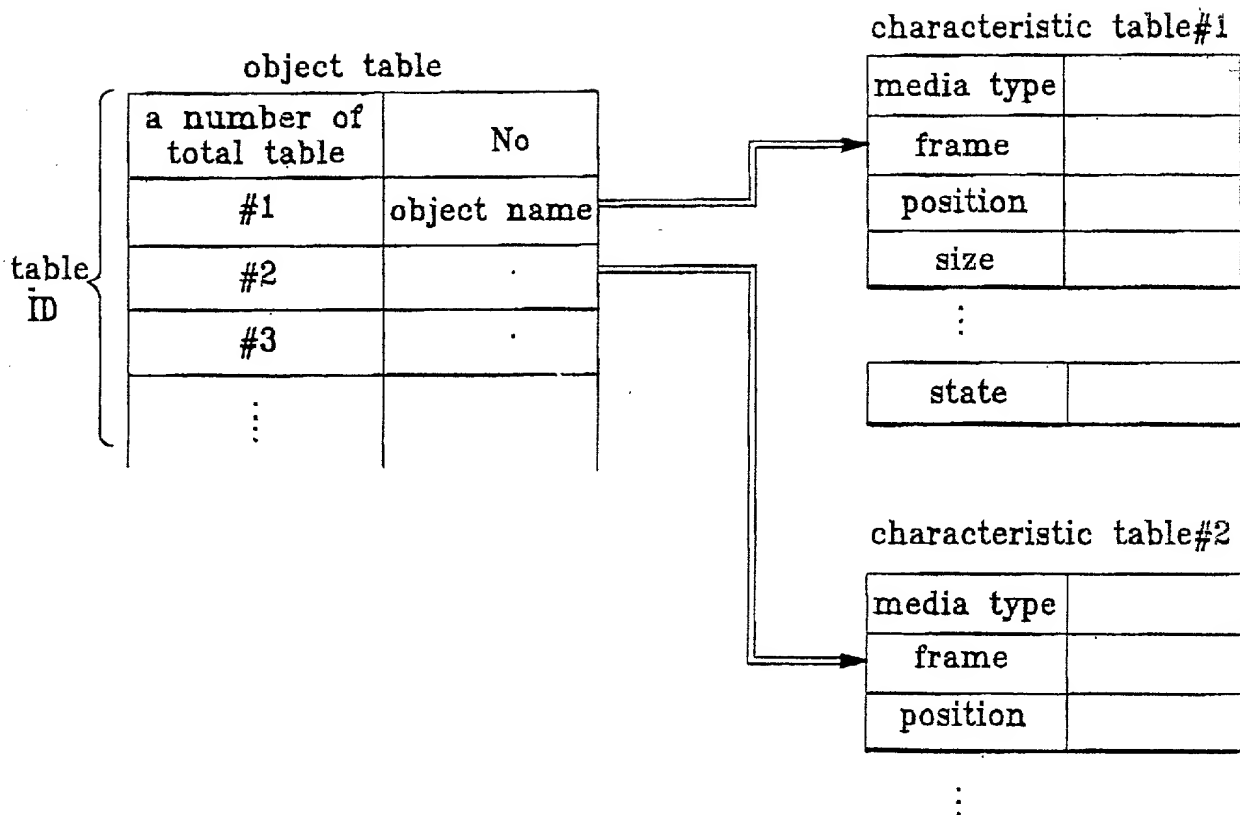| media type | |
|---|---|
| frame | |
| position | |

⋮

# BIRCH, STEWART, KOLASCH & BIRCH, LLP

## COMBINED DECLARATION AND POWER OF ATTORNEY
## FOR PATENT AND DESIGN APPLICATIONS

**PLEASE NOTE:**
**YOU MUST**
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As a below named inventor, I hereby declare that: my residence, post office address and citizenship are as stated next to my name; that I verily believe that I am the original, first and sole inventor ( if only one inventor is named below) or an original, first and joint inventor (if plural inventors are named below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**Insert Title:** ➡

APPARATUS AND METHOD FOR DISPLAYING ADDITIONAL INFORMATION

**Fill in Appropriate**
**Information -**
**For Use Without** ➡
**Specification**
**Attached:**

the specification of which is attached hereto. If not attached hereto,
the specification was filed on _____ as
United States Application Number _____; and /or

the specification was filed on _____ as PCT
International Application Number _____; and was
amended under PCT Article 19 on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56.

I do not know and do not believe the same was ever known or used in the United States of America before my or our invention thereof, or patented or described in any printed publication in any country before my or our invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (six months for designs) prior to this application, and that no application for patent or inventor's certificate on this invention has been filed in any country foreign to the United States of America prior to this application by me or my legal representatives or assigns, except as follows.

I hereby claim foreign priority benefits under Title 35, United States Code, §119 (a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

**Insert Priority**
**Information:** ➡
**(if appropriate)**

**Prior Foreign Application(s)**

| (Number) | (Country) | (Month/Day/Year Filed) | Priority | Claimed |
|---|---|---|---|---|
| 2597/1999 | Korea | January 27, 1999 | XX Yes | ☐ No |
| 2598/1999 | Korea | January 27, 1999 | XX Yes | ☐ No |
| (Number) | (Country) | (Month/Day/Year Filed) | ☐ Yes | ☐ No |
| (Number) | (Country) | (Month/Day/Year Filed) | ☐ Yes | ☐ No |
| (Number) | (Country) | (Month/Day/Year Filed) | ☐ Yes | ☐ No |

I hereby claim the benefit under Title 35, United States Code, §119(e) of any United States provisional application(s) listed below.

**Insert Provisional**
**Application(s):** ➡
**(if any)**

(Application Number) _____ (Filing Date) _____

(Application Number) _____ (Filing Date) _____

All Foreign Applications, if any, for any Patent or Inventor's Certificate Filed More Than 12 Months (6 Months for Designs) Prior To The Filing Date of This Application:

**Insert Requested**
**Information:** ➡
**(if appropriate)**

| Country | Application No. | Date of Filing (Month/Day/Year) |
|---|---|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

**Insert Prior U.S.**
**Application(s):** ➡
**(if any)**

(Application Number) _____ (Filing Date) _____ (Status - patented, pending, abandoned) _____

(Application Number) _____ (Filing Date) _____ (Status - patented, pending, abandoned) _____

I hereby appoint the following attorneys to prosecute this application and/or an international application based on this application and to transact all business in the Patent and Trademark Office connected therewith and in connection with the resulting patent based on instructions received from the entity who first sent the application papers to the attorneys identified below, unless the inventor(s) or assignee provides said attorneys with a written notice to the contrary:

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YOU MUST
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FOLLOWING:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of First or Solo Inventor:
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